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Bittersweet: Study Exposes Hidden Dangers of Heavy Metals in Chocolate

Consumer Reports testing found that 1 in 3 chocolate products contain heavy metals like lead and cadmium that may harm kids' neurological development and cause other health issues.

By **Dr. Joseph Mercola**

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Story at a glance:

- Testing by Consumer Reports found one-third of chocolate products tested were high in heavy metals, and the percentage of contaminated products rose when it was dark chocolate.
- Of the 28 dark chocolate bars tested in 2022, only five had levels below 100% of the maximum allowable dose and only two had levels below 50%. In the 46 products tested in 2023, they found detectable levels in every product and 539% of the maximum allowed dose of lead in Perugina 85% premium dark chocolate.
- Chocolate is not the only source of heavy metal and it bioaccumulates, so it's important to be aware of your overall intake. Cadmium can be absorbed from the soil and is found in the highest levels in grains and vegetables.
- Exposure to lead and cadmium poses the highest risk to the brains and neurological systems of infants and children. Since cadmium crosses the placental barrier, exposure during pregnancy can have serious health consequences, including increased mortality from heart and kidney disease and cancer.
- Dark chocolate has many health benefits, but your source should be chosen wisely to avoid exposure to heavy metals. Consider incorporating strategies for heavy metal detox to protect your mitochondrial function.

Testing in 2023 by Consumer Reports found one-third of the chocolate products they tested were high in heavy metals.

These are naturally occurring elements in the environment that are five times denser than water and have multiple applications in industry, agriculture, medicine and technology.

However, wide usage has raised concerns over the health effects heavy metals have on humans and the environment.

Lead, chromium, cadmium, arsenic and mercury are among the metals identified as having public health significance since they are known to trigger organ damage even at low levels of exposure. These same heavy metals are also "known" or "probable" human carcinogens.

According to the Occupational Safety and Health Administration, heavy metals are toxic metals that are known to negatively affect human health. They can bioaccumulate to become a significant health hazard. Cadmium is an extremely toxic metal used in industrial workplaces.

Several deaths have been attributed to acute exposure in welders who unsuspectingly used cadmium-containing alloys.

However, lead is one of the most prevalent overexposures in occupational health as it's found in construction work, radiator repair shops, firing ranges and most smelter operations to name a few.

Other heavy metals identified as toxic include arsenic, beryllium, hexavalent chromium and mercury.

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Several types of chocolate high in lead and cadmium

Consumer Reports tested a variety of chocolate candies and powders, including dark chocolate, milk chocolate, chocolate chips, cocoa powder and brownie, cake and hot chocolate mixes.

This was a follow-up from testing in 2022 on dark chocolate, in which they tested 28 bars from different companies for lead and cadmium.

In the 2022 and 2023 tests, researchers used California's maximum allowable dose level for heavy metal tested since as Consumer Reports noted there are no federal limits for lead or cadmium in food and the researchers believed that California's standards are currently the most protective available.

The California standards limit consumption to 0.5 micrograms per day of lead and 4.1 micrograms per day of cadmium.

Consumer Reports notes that the tests were not an assessment of whether a particular chocolate exceeded California's legal standards, but the California standards were used to indicate products that had a comparatively higher level of heavy metals.

Of the 28 dark chocolate bars tested in 2022 for lead and cadmium, only five had levels that were below 100% of the maximum allowable dose level for lead and cadmium assuming a 1-ounce serving size.

There were eight that were high in cadmium, 10 that were high in lead and five that were high and lead and cadmium.

There are two main components in chocolate from the cacao bean. These are cocoa solids and cocoa butter, which together are called cacao or cocoa.

Dark chocolate tends to be higher in heavy metal contamination than milk chocolate because it has a higher cacao content, which is more likely to be contaminated with cadmium and lead.

In 2023, Consumer Reports sought to determine whether other cacao-containing foods had the same risk. They tested 48 different chocolate products across seven categories and added several dark chocolate bars to confirm their previous results.

They used products from name brands like Nestle, Ghirardelli and Hershey's and bought them from national retailers like Whole Foods, Target, Costco and Trader Joe's.

As in the previous tests, the dark chocolate had higher levels of heavy metal than the milk chocolate.

However, James E. Rogers, Ph.D., director and acting head of product safety testing also noted that every product had detectable amounts of lead and cadmium and 16 had concerning levels of at least one metal, and in some cases, more than twice the limit.

The results of the testing revealed high levels of lead and cadmium in several of the dark chocolate bars, including 539% of the maximum allowed dose of lead in Perugina Extra Dark Chocolate Premium 85%.

None of the milk chocolate bars were over 100% of the levels for lead or cadmium and only two of the dark chocolate chips were over 100% of the allowed levels for lead.

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Heavy metal can accumulate from several sources

As Consumer Reports noted, high levels of cadmium get into the chocolate as the plant absorbs it from the soil. Lead also may be deposited on the beans after harvest as they dry outdoors.

However, chocolate is not the only food or beverage that contains heavy metals and since the metals can bioaccumulate, it's important to be aware of your overall intake.

A 2021 study published in Scientific Reports also evaluated the presence of cadmium and lead in a selected number of fruits and vegetables.

The foods evaluated were fresh, frozen, dried or processed. The study evaluated 370 samples of a variety including apples, pears, grapes, strawberries, carrots and tomatoes.

The tests show that the concentration of cadmium and lead was present in all types of fruits and vegetables, but the amount varied substantially. The highest concentrations were found in dried products, and several samples exceeded the maximum permissible concentrations.

Another 2022 analysis looked at major food groups for the presence of cadmium, lead, mercury and nickel.

The data showed that cereals and vegetables were the major contributors of cadmium, nickel and mercury while water and other beverages were a major source of lead.

By contrast, eggs, milk and dairy products, fats and oils had the lowest number of heavy metals tested.

Despite the common association between mercury and fish, this analysis showed fish was not an important source of mercury. This was not the case in a 2016 evaluation by the Environmental Working Group (EWG).

The EWG reported the results of testing from 254 women who reportedly ate at least two meals of some type of fish every week.

They measured mercury in the women's hair to establish how much was absorbed from the fish and found that 30% of the participants had too much exposure according to Environmental Protection Agency guidelines for pregnant women.

However, these are not the only foods that increase your exposure to heavy metals. Eat This, Not That! reported that a 2021 study revealed that popular baby food brands had well above the recommended limits for arsenic, lead, cadmium and mercury.

Fruit juice can also exceed levels of lead, and rice is a well-known source of inorganic arsenic. Just as the cocoa bean can absorb cadmium from the soil, so can leafy vegetables and root vegetables like carrots and potatoes.

Exposure in childhood can damage the nervous system

Exposure to cadmium and lead in infants and children pose a higher risk to their brains and neurological system than in adults.

Unfortunately, these heavy metals can make their way into the food supply as contaminants. For example, the U.S. Food and Drug Administration warned parents on Oct. 30, that after testing food pouches by Wanabana, "extremely high" concentrations of lead were found that could lead to "acute toxicity."

Testing was done after four children in North Carolina tested for high lead levels that were linked to the puree.

A 2019 study evaluated children's dietary exposure to lead and cadmium using data from the National Health and Nutrition Examination Study.

The estimated mean lead exposure range was far higher than the California standard, ranging from 1 to 3.4 micrograms per day.

Most of the exposure came from grains, fruit, dairy and mixtures, such as lasagna, soups, hamburgers and pizza.

The estimated mean cadmium exposure was estimated at 0.38 to 0.44 micrograms per kilogram of body weight per day.

Lead exposure is known to slow a child's growth and development and impair learning, hearing and speech.

Damage to the brain and nervous system can also trigger behavior problems and cause lower IQ with a decreased ability to pay attention and poor performance in school.

Exposure at younger ages is more harmful because children's bodies and brains are still developing and growing.

Data show that exposure to cadmium can have an adverse effect on the kidneys, heart, liver and nervous system. Exposure in utero and early life can result in serious health issues related to developmental disabilities since cadmium crosses the placental barrier.

Exposure during pregnancy can have serious health consequences, including an increased risk of mortality related to cancer, heart disease, kidney disease and neurological problems.

In a 2012 study by Harvard researchers, they found children who had the highest levels of cadmium were 3.21 times more likely to have learning disabilities and three times more likely to participate in special education than those with the lowest levels.

"One of the important points of the study is that we didn't study a population of kids who had very high exposures. We studied a population representative of the U.S. That we found any [effect] suggests this is occurring at relatively low levels," said Dr. Robert Wright, an associate professor of pediatrics and environmental health at Harvard.

Use dark chocolate judiciously

The health benefits of eating dark chocolate are well-established. It is the cacao content that makes a difference in terms of benefit as it contains large amounts of polyphenols, including epicatechin, resveratrol, phenylethylamine and theobromine.

However, as the Consumer Reports studies demonstrated, chocolate with higher levels of cacao also has higher levels of cadmium and lead.

Human data from Loma Linda University, presented at the Experimental Biology 2018 annual meeting in San Diego, revealed chocolate with high levels of cacao helps improve stress levels, inflammation, mood, memory and immune function.

The caveat? It must contain at least 70% cacao and be sweetened with organic cane sugar.

According to Loma Linda University:

> "While it is well known that cacao is a major source of flavonoids, this is the first time the effect has been studied in human subjects to determine how it can support cognitive, endocrine and cardiovascular health. …
>
> "These studies show us that the higher the concentration of cacao, the more positive the impact on cognition, memory, mood, immunity and other beneficial effects."

Several studies have also confirmed cacao can benefit your heart, blood vessels, brain and nervous system, and help combat diabetes and other conditions rooted in inflammation.

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As noted in a paper published in the journal Oxidative Medicine and Cellular Longevity:

> "Cocoa contains about 380 known chemicals, 10 of which are psychoactive compounds. …
>
> "Cocoa has more phenolics and higher antioxidant capacity than green tea, black tea, or red wine. …
>
> "The phenolics from cocoa may thus protect against diseases in which oxidative stress is implicated as a causal or contributing factor, such as cancer. They also have antiproliferative, antimutagenic, and chemoprotective effects, in addition to their anticariogenic effects."

There is significant evidence that dark chocolate has health benefits, but it's important to realize that these benefits are not transferred to milk chocolate and it's important to judiciously choose your source of dark chocolate.

According to the 2022 Consumer Reports study, the safer choices for dark chocolate include Ghirardelli's Intense Dark Chocolate 86% cacao and Mast Organic Dark Chocolate 80% cacao. These two bars were the only ones where the levels of lead and cadmium were less than 50% of the California maximum allowable dose level.

Heavy metal detoxification

As Dr. Frank Shallenberger, author of "Bursting With Energy: The Breakthrough Method to Renew Youthful Energy and Restore Health," and a natural medicine physician for nearly five decades, discussed in our 2022 interview, a decrease in mitochondrial function is a hallmark of the aging process and many chronic diseases.

Even asymptomatic people in their 30s can have a significant decline in mitochondrial function, which is indicative of premature aging and future health problems.

Heavy metal toxicity can take a toll on your mitochondrial function, and to address this, Shallenberger typically combines chelation therapy with colonics and sauna use. While many people use far-infrared saunas, I prefer near-infrared saunas for several reasons.

For starters, near-infrared penetrates much deeper into your tissues, releasing toxins.

Importantly, 95% of melatonin is also produced in your mitochondria in response to near-infrared light. Melatonin is a very powerful antioxidant that helps mop up the reactive oxygen species in the mitochondria.

Melatonin also helps increase glutathione, which is a major detoxification agent. For tips on how to create an electromagnetic field-free sauna, listen to our interview, as we go into more detail than what I've summarized here.

Originally published by Mercola.

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Dr. Joseph Mercola

Dr. Joseph Mercola is the founder of Mercola.com.

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CAWS
15 days ago

In addition most chocolate and tea especially is grown outside the US and when it is sent here to be processed it is fumigated [as are grains] to kill bugs ;usually with a fluorine or bromine based fog. Halogens bind to heavy metals and make them even more toxic and harder to detox. Even organic baby formula has brown rice syrup as a sweetener. While the other brands have high fructose corn syrup [Roundup and Hg]; brown rice has arsenic. Mix the formula with standard tap water at .7ppm F and formula at .3ppmF and you have just dosed your kid with a 260lb man's level of F & enhanced with arsenic.No wonder 54% of America's children have chronic disease in 2023. In the 1960s ;it was 6%.

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A. Miller
15 days ago

What a world. Nothing is to be trusted. Simple pleasures are being used to poison us. Big pharma must be cheering.

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carmen strating
14 days ago

so disappointed about Theo

1 0 Reply • Share ›

> **BChristine** ➦ carmen strating
> 14 days ago
>
> I relate! Theo's chocolate just has that ultimate creamy taste that others don't seem to. I still buy the lower content cacao and eat it 'cautiously'...
>
> 0 0 Reply • Share ›

Ronald Martono
15 days ago

Our intake of chocolate remains small. I d rather focus on the main components of food intake. In particular being diligent with water, rice (arsenic, rinse well...), flour , avoiding processed foods and aluminum exposure (packing, cook ware etc) can do a great deal. Do not panic, enjoy your dark chocolate.

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CastleConnell
15 days ago

Our food supply is destroyed, every time I think I am eating something healthy, I read a negative. I am constantly reading labels, so much food has canola oil, or soybean oil, even those presented as organic and healthy. I am almost getting afraid to put anything in my mouth.

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BChristine
15 days ago

I was ex-disappointed to read this when it came out in CR. I had been noshing on organic, fair-trade, high-quality dark chocolate (Theo 85% cacao) not only for its health benefits, but because it was my "go-to" instead of coffee - which I detest.
Until I found out it was one of the highest in both lead and cadmium ... now I eat some of the more 'recommended' dark chocolate with a lower cacao content, but it has more sugar ... the ones listed as lowest content are difficult to find and/or very expensive. So much for healthy, guilty pleasures.

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Douglas Jack
9 days ago

Thank you Dr. Joseph Mercola, for this warning article on Lead, Cadmium etc. heavy metals in Chocolate, particularly Dark Chocolate. Below is the web-link to the tested Luker Bitter Chocolate from Columbia, which I eat. Please tell me if this article misses anything?
I've followed Dr Mercola's articles for decades & am a good friend of life-sciences engineer, Dag Radicevic, a colleague of Mercola, who helped bring Infrared Diagnostic technology into practical testing-monitoring over many decades, of which I have heard you are an early adopter. Dr Mercola has shared a wealth of natural body health & lifestyle information over decades. Infrared as a passive read-only of the distinguished wave forms which the body & various kinds of illness inflammation which disease produces. Infrared is used in multi-modal diagnostics, lowering exposures to various invasive X-ray, Ultrasound, MMR & other body penetrating & often damaging diagnostic imaging devices.
I eat a wonderful tasting Luker Bitter (Its actually just smooth with natural Cocoa butter, without the sugar. I've just visited the Luker website to find out they constantly monitor their Chocolate with in-house testing. Chocolate In-house Laboratory Quality Testing in Manufacturing, Growing, Fermentation by Sandra Liliana Ostos, Director of Quality & Environmental Management, Cocoa Bean quality. Tests for bacterial, fungal & physical contamination, mycotoxins, heavy metals such as lead, cadmium, mercury from soil, stones, dust & metal fragments during harvest, transport & processing. I eat Bitter-Chocolate. Produits des Champs, St-Humbert, Quebec. 450-812-8686 29Aug'23
https://www.lukerchocolate....

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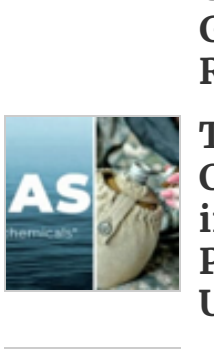

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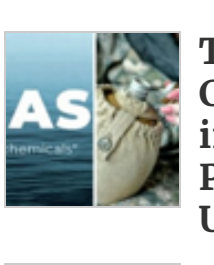

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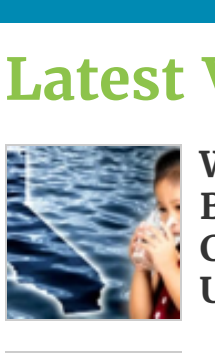

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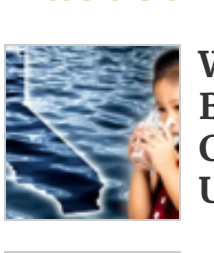

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